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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/627,723	07/28/2003	Suk-Gyun Han	1349.1256	7094

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EXAMINER

DUDA, RINA I

ART UNIT PAPER NUMBER

2837

DATE MAILED: 08/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/627,723

Applicant(s)

HAN, SUK-GYUN

Examiner

Rina I. Duda

Art Unit

2837

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 19 and 20 is/are allowed.
- 6) ☒ Claim(s) 1-3, 9, 15, 16 and 21 is/are rejected.
- 7) ☒ Claim(s) 4-8, 10-14, 17 and 18 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. ____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>7/28/03&4/25/05</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3, 9, 15, 16, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bausch US patent 5034668) and Cassat et al (US patent 5245256).

Claims 1 and 9, Bausch teaches a control circuit for a brushless DC motor comprising a speed determination unit including means 32/34/36/38/40, a subtractor 44 for taking the difference between a detected speed value and a command speed value 46, a speed controller to output a reference current 22, and a current controller including means 16/18/20/24 for outputting switching control signals. Bausch fails to clearly describe an inverter for driving the brushless DC motor.

However, Cassat et al describe a control circuit for a brushless DC motor comprising a speed control device 105 for outputting switching control signals to inverter 107 which drives motor 100.

Claims 2 and 15, Bausch describes a speed determination circuit including a flux determination unit 32 for determining fluxes based on voltage and current from the motor windings and a speed calculation unit including elements 34/36/38/40/42 for determining the speed of the motor.

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Claims 3 and 16, Bausch describes that means 32 includes a current sensing device for sensing the current through the motor windings, a phase transformer 34 for transforming the three-phase motor current into a two-phase signal, and a flux determiner 36/38 for determining the flux of the two-phase signal.

Claim 21, Bausch describes a speed-calculating device for a brushless DC motor for calculating the speed of the motor without the use of speed sensors and speed drivers as shown in figure 1.

Therefore, it would have obvious to one person of ordinary skill in the art to use an inverter in the motor control system taught by Bausch, since said inverter would control the commutation order of the motor phases and current through the motor based on the a desired command signal.

Claim Objections

3. Claims 4-8, 10-14, and 17-18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Allowable Subject Matter

4. Claims 19-20 are allowed.

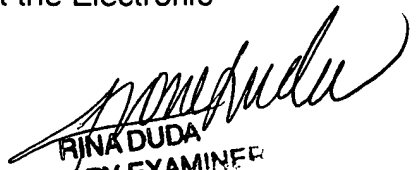
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5. The following is a statement of reasons for the indication of allowable subject matter: The prior art made of record does not teach a phase transformer for transforming the three phases of the motor into two phases using the formulas recited in claim 4 or a flux determiner for determining fluxes using the equations recited in claim 5 or a speed control system for brushless DC motor using a means for determining a speed of the motor based on a time interval during which flux values of desired motor phases become zero or a speed determination unit including a speed calculation unit including a timer to determine a period between when the flux of a first transformed phase becomes a specific value and when the flux of the second transformed phase becomes said specific value.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rina I. Duda whose telephone number is 571-272-2062.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Martin can be reached on 571-272-2107. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


RINA DUDA
PRIMARY EXAMINER